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SURVEYS FOR SOUTHWESTERN WILLOW FLYCATCHERS WITHIN VR-176

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SURVEYS FOR SOUTHWESTERN WILLOW FLYCATCHERS WITHIN VR-176

DRAFT REPORT TO GEOMARINE, INC.

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EXECUTIVE SUMMARY

As part its Biological Opinion concerning the proposed expansion of activities in VR-176 by the German Air Force, the US Fish and Wildlife Service required the implementation of survey and monitoring programs for five species of concern, including the southwestern willow flycatcher. In 2004, field crews of the Rocky Mountain Research Station conducted surveys for flycatchers along 15 km of riparian habitat within VR-176. Six sites were surveyed, two within the Gila River drainage and four within the San Francisco drainage. These drainages are near to one of the largest populations of the flycatcher on the lower Gila River in New Mexico. No flycatchers were located in any of the drainages surveyed. However, we recommend that surveys be repeated periodically, as colonization of sites within VR-176 is possible and some of the habitat surveyed has the potential to support breeding willow flycatchers.

INTRODUCTION

The southwestern willow flycatcher *(Empidonax traillii extimus)* is a small songbird that migrates to the southwestern United States to breed in dense riparian vegetation along river corridors. The southwestern willow flycatcher, one of four recognized subspecies of *E. traillii*, was federally listed as endangered in 1995, and is state listed as endangered in California, New Mexico and Utah, and as a Species of Special Concern in Arizona (USFWS 1995, BISON). It is currently considered the top priority species for US Fish and Wildlife Service Region 2. The most current count estimates the total number to be approximately 1,000 breeding pairs (Sogge *et al.* 2002, USFWS 2002).

FLYCATCHER RANGE AND HABITAT - The southwestern willow flycatcher is found during the breeding season from southern California and Baja California eastward through Arizona, southern Utah, southern Colorado, New Mexico, and trans-Pecos Texas (Unitt 1987, USFWS 2002). Across the subspecies range, breeding habitat varies in species composition and canopy structure but nesting is almost exclusively near surface water or saturated soils in dense riparian vegetation (Sogge and Marshall 2000, USFWS 2002, Paradzick and Woodward 2003). The sites occupied by the flycatcher are distributed over a wide range of elevations but generally the flycatcher breeds at sites that are low to mid-elevation with approximately 80% of the sites below 1600 m (Sogge *et al.* 2002).

Fluvial geomorphology and floodplain topography could indicate where flycatchers breed on a rangewide scale. The larger populations of E. t. extimus occupy broad lowland floodplains. In Arizona, with the exception of a high-elevation population in the White Mountains, (which may prove to not be a pure strain of *E. t. extimus* (Sedgwick 2001)), all of the populations with greater than 5 territories are distributed on broad, lowland floodplains (Paradzick and Woodward 2003). In New Mexico, the largest population is in the Cliff-Gila Valley, a broad, lowland floodplain (Stoleson and Finch 2003). An analysis of flycatcher distribution at one of the larger sites in Arizona, found that larger floodplains increased the likelihood of flycatcher presence (Hatten and Paradzick 2003). The authors reason that the fluvial geomorphological processes and floodplain

topography influence plant establishment (Hatten and Paradzick 2003). Floodplain features influencing flycatcher distribution are not well studied but a significant amount of research has shown that topography and geomorphologic characteristics influencing channel migration and flooding can have a significant impact on the composition of riparian communities and the patterns of patch succession across the floodplain (Bradley and Smith 1986, Decamps et al. 1988, Nilsson et al. 1989, Szaro 1990, Gregory et al. 1991, Malanson 1993, Bendix 1994, Durkin et al. 1996, Muldavin et al. 2000, Nilsson and Berggren 2000).

Extensive riparian habitat appears to be more suitable for flycatcher occupation. Dense riparian foliage has been shown to be a significant characteristic of flycatcher habitat (Allison et al. 2003, Stoleson and Finch 2003), but two studies have looked at the amount of riparian habitat across the floodplain as an important factor for habitat selection. Sedgwick and Knopf (1992) found a correlation between the flycatcher's distribution and the abundance, density and coverage of willows. Hatten and Paradzick (2003) found a relationship between flycatcher distributions and an increasing amount of riparian habitat within a 4-hectare area.

FLYCATCHERS IN THE GILA WATERSHED - The Gila River drainage supports more breeding flycatchers than any other major drainage (Sogge *et al.* 2002). One of the largest known populations of the flycatcher breeds in the Cliff-Gila Valley (Sedgwick 2000, USFWS 2002) and a population in the Gila Lower Box, between the towns of Redrock and Verdin, has grown substantially since 1999 (unpublished survey data, Bureau of Land Management). The population in the Cliff-Gila Valley has apparently grown substantially since it was first surveyed in 1994, when 81 pairs were located (Parker and Hull 1994). The growth is likely a result of high average nest success (Stoleson and Finch 1999). A peak in flycatcher numbers was documented in 1999 with 247 pairs. The numbers have declined in the last few years, most likely due to drought in the region. However, it seems likely that the population will continue to grow and expand in the future. New sites are regularly colonized even as numbers declined after 1999. For example, in 1995 the U-bar Ranch initiated riparian restoration in a bank

stabilization effort along the Gila River in the Cliff-Gila Valley. Flycatchers moved to the site with two breeding pairs documented in 1999, six in 2001, 15 in 2002, and 26 in 2003, and 41 in 2004 (RMRS unpublished data).

Ongoing riparian recovery efforts and livestock exclusion by the Gila National Forest and The Nature Conservancy of New Mexico are creating healthy riparian habitat in numerous sites in southwestern New Mexico that were not occupied by southwestern willow flycatchers as of 1998. Continuous improvements in habitat quality as well as proximity to the large flycatcher population in the Cliff-Gila valley suggest that these sites are the most likely targets for colonization by flycatchers in the near future.

PURPOSE OF SURVEYS

In November of 1997, the U.S. Air Force entered into formal consultation with the U.S. Fish and Wildlife Service, in accordance with Section 7 of the Endangered Species Act, regarding the Proposed Expansion of German Air Force Operations at Holloman Air Force Base. On May 8, 1998, the Service issued its Biological Opinion that required the Air Force to implement a survey and monitoring program for five species of concern, including the southwestern willow flycatcher. Several potential flycatcher-breeding sites located on the San Francisco and Gila Rivers lie within the VR-176 flight path. We report the results of field surveys for southwestern willow flycatchers conducted in the Gila and San Francisco Watersheds within VR-176 during the breeding season of 2004.

STUDY SITES

Surveys were conducted in two general areas: (1) San Francisco River near the towns of Alma and Glenwood, New Mexico, and (2) the Gila River near Gila Hot Springs, New Mexico (Figure 1). We surveyed six sites, two on the Gila, and four on the San Francisco (Table 1). Because of their structure, proximity to water, and proximity to the large population in the Cliff-Gila Valley, colonization of these sites by flycatchers is possible.

SAN FRANCISCO RIVER SITES

The San Francisco River drains most of the northwestern portion of the Gila National Forest and parts of the Apache-Sitgreaves National Forest. The San Francisco is a free-flowing river in New Mexico, entering the state from Arizona near the town of Luna at an elevation of 2,494 meters and flowing approximately 153 km through a series of confined canyons alternated with wider floodplains dominated by mainly agricultural fields (Durkin et al. 1996) and flowing back into Arizona at an elevation of 1,412 meters. The flows vary greatly with the season; the lowest average flows are in June, average peak flows in March, and maximum annual peak flows tend to be in October (USGS Stream Flow Data). Surface flow data from a defunct gauging station at the Alma Bridge (1964 - 1986) average 5.6 ft^3/sec in June and 209 ft^3/sec in March.

Survey sites on the San Francisco River were disjunct with sections of private land separating each site. We surveyed four separate sites (Figure 2): (1) a 3.7 km section of canyon running from the Alma Bridge downstream to Harve Gulch (Harve Gulch Section) (Figure 4); (2) a 0.7 km section less than a kilometer southwest of Alma (Alma Section) (Figure 5); (3) a 1.7 km section, approximately 4 km north of Alma (Keller Canyon Section) (Figure 6); and (4) habitat along Whitewater Creek at the Glenwood Fish Hatchery (New Mexico Department of Game and Fish) (Figure 7) because of records of Willow Flycatchers nesting here (S. Williams, pers. comm.). Whitewater Creek flows into the San Francisco River approximately half a kilometer from the Hatchery. We selected survey sites based on historical records of breeding flycatchers in

the vicinity (S. Williams, pers. comm., Durkin et al. 1996) and expert assessment of habitat by personnel of the Gila National Forest (E. Taylor pers. comm.) and New Mexico Department of Game and Fish (S. Williams, pers. comm.)

SAN FRANCISCO – HARVE GULCH SECTION - The Harve Gulch Section lies between Harve Gulch and the Alma Bridge along the San Francisco (Figures 4 and 10). Much of this section lies in a very narrow, isolated canyon. Habitat in this section consists of small islands of Fremont Cottonwood (*Populus fremontii*) and scattered stringers of coyote willow (*Salix exigua*) and nursery bars of seepwillow (*Baccharis salicifolia*). Much of the floodplain is scoured and even where terraces are present; the soil texture is predominately cobble. The river channel was completely dry in much of the section and water was present only in pools or sloughs of standing water, which dried as the season progressed. The canyon opens near the Alma Bridge and here, water was present and flowing throughout the survey season. Habitat in just below the bridge grows on a protected terrace and consists of mainly cottonwood with dense stands of coyote willow. Coyote willow stringers line the river downstream from the bridge and are good quality until the riverbed dries up approximately 200-300 meters from the bridge.

SAN FRANCISCO – ALMA SECTION - The Alma Section is a piece of Forest Service property adjacent to the town of Alma (Figures 5 and 11). The section is in the Alma Valley, which had been grazed until 1998 (Davis 2001). The dominant riparian vegetation of the Alma site is comprised of stands of Fremont cottonwood with sparse understory and the riverbank supports dense stands of mainly coyote willow. The habitat on the site is still recovering from grazing; much of the floodplain is open and rubber rabbitbrush (*Chrysothamnus naseosus*) dominates the elevated cobble bars.

SAN FRANCISCO – KELLER CANYON SECTION - The Keller Canyon section is located approximately 4-kilometers upstream from the town of Alma, New Mexico (Figures 6, 12, and 13). The stretch surveyed falls within Section 29, T1N, R20W (Public Land Survey System). Elevations of the site are between1,280 – 1,275 meters. The upper third section of this survey is confined in a narrow north-to-south running canyon. The river

then turns to the east and flows through the canyon for 0.5-kilometer, the canyon walls gradually widen until Keller Canyon meets and the river flows onto a broad floodplain in the Alma Valley. A water impoundment across the river near to Keller Canyon has trapped fine sediment in the reach and substrates are fine, sandy, and saturated even in the dry months of May and June. The moist soil conditions support a lush ground cover of rushes (*Juncus spp.)* and grasses below the stream impoundment. Fremont and lanceleaf cottonwoods (*P. x acuminata*) are the most common tree below the impoundment. The vegetation is limited by canyon walls above the impoundment but is dense and healthy and reflects the abundance of permanent water in this section. Bluestem willow (*S. irrorata*) is common, as are boxelder (*Acer negundo*) and cottonwood. Walnut (*Juglans major*) less common but present.

GLENWOOD FISH HATCHERY - The Glenwood Fish Hatchery is in the town of Glenwood, New Mexico. The site is located along the Whitewater Creek, only 0.5-kilometers from the confluence with the San Francisco, at an elevation of 1,438-meters (Figures 7 and 14). There is a relatively large riparian forest patch on the site with a high canopy (>20-meters) comprised of native and cultivated species including: Fremont cottonwood, Arizona sycamore, ash (*Franxinus pensylvannica*), boxelder, Arizona alder (*Alnus oblongifolia*), walnut (*Juglans nigra*), and Siberian elm (*Ulmus pumila*). Dense thickets of black rasberry (*Rubus occidentalis*) cover the understory in the entire patch, except where a path has been mechanically cleared of vegetation. Along the creek, on the side opposite to the forest patch, the habitat is shorter in stature and is comprised of bluestem willow, young boxelder, and alder. The foliage from the forest hangs over the creek. A small ditch runs through the patch from a pond under the canopy. A pair of flycatchers was reported to have bred here in the mid-1990s (S. Williams pers. comm.).

GILA RIVER SITES

The Gila River begins in the Mogollon Mountains in the Gila Wilderness. There are three forks of the Gila in the Wilderness: the West, East, and Middle. The confluence of the West and Middle Forks is near the Gila Cliff Dwellings. From the confluence at

1,720 meters elevation, the West Fork flows approximately 7 kilometers through a relatively broad floodplain, the upper end of which is the Heart Bar Ranch managed by New Mexico Department of Game and Fish and the lower section is peopled by residents of the small town of Gila Hot Springs and visitors to two Forest Service campgrounds. At the end of the valley, the West Fork and East Fork converge and descend into a steep-walled canyon, flowing approximately 50 kilometers before leaving the isolated mountain canyon and flowing into the broad Cliff-Gila Valley.

GILA RIVER – MAIN FORK SECTION - The Main Fork survey (Figures 19 and 16) was conducted along the same route surveyed in previous years. It begins immediately downstream from the confluence of the East and West Forks where the river enters a deep canyon. It is in a mountain setting where Ponderosa Pine and Rocky Mountain Juniper can be found on the higher terraces. Elevations surveyed range from 1,694 – 1,665 meters along a 5-kilometer length of river. Riparian communities are composed of isolated but dense stands of mainly Arizona Alder and associated boxelder. Bluestem willows line the river and grow extensively in places. Narrowleaf (*P. angustifolia*) and lanceleaf cottonwoods are scattered but present in various stages of development. Rubber rabbitbrush is common on the elevated cobble bars.

GILA RIVER – HEART BAR RIPARIAN PRESERVE - The Heart Bar Ranch is located in the broad floodplain along the West Fork of the Gila River (Figures 8 and 15). New Mexico Department of Fish and Game is the managing authority and the site enjoys protected status as a riparian preserve. The Riparian Preserve is on a floodplain with sandy-soil terraces that support extensive growth of mature cottonwood with dense subcanopy layers of boxelder. Many occupied sites in the Cliff-Gila Valley are comprised of the same vegetation species and have a similar structure. Abandoned channels support a community dominated by bluestem willow and the cool, moist conditions within this habitat is not unlike willow habitat occupied by willow flycatchers in the Cliff-Gila Valley.

SURVEY METHODS

Each site was surveyed systematically for willow flycatchers using the revised survey protocol developed by the US Fish and Wildlife Service (Sogge *et al.* 1997, USFWS 2000). These techniques employ the playing of recordings of flycatcher song to elicit responses from territorial birds. All flycatchers heard or seen would be recorded. An effort was made to conduct surveys between sunrise and noon, as birds tend to be unresponsive after noon (Sogge *et al.*, 1997). On initial surveys, all riparian habitat was surveyed. It was apparent that some sections of these rivers did not constitute suitable habitat for willow flycatchers because of inadequate vegetation cover. These sections were not surveyed intensively in subsequent visits. Surveys were not conducted during periods of rain or strong winds. Data were recorded on official southwestern willow flycatcher data sheets (Appendix 1). Surveyors from the Rocky Mountain Research Station held all appropriate state and federal permits required for surveying and monitoring southwestern willow flycatchers, and all had attended a mandatory survey protocol training session before initiating fieldwork.

RESULTS & DISCUSSION

SURVEY RESULTS

We did not locate any willow flycatchers in any of the surveyed riparian habitats (Table 2).

We determined the habitat on the Alma Section was not currently suitable for flycatchers and therefore only completed the first survey. We walked the edge of the site before surveying and felt that it was unlikely to support flycatchers but decided to complete at least one survey to explore the habitat from the riverside. Our assessment was confirmed on the first survey. The site is still recovering from grazing on the floodplain and the cottonwoods are open without suitable breeding substrate in the understory and the willows lining the river form only narrow stringers (Figure 11). The floodplain is wide

and has potential to support extensive, structurally complex riparian habitat.

Other Species Observations

We report on selected species of concern observed on the surveys (Table 1).

WESTERN YELLOW-BILLED CUCKOO (*COCCYZUS AMERICANUS OCCIDENTALIS*) - The yellow-billed cuckoos distribution in the West has declined significantly in recent years because of habitat loss and degradation. The U.S. Fish and Wildlife Service was petitioned in 1998 to list the subspecies under the Endangered Species Act (USFWS 2001). The U.S. Fish and Wildlife Service determined the listing was warranted, but listing was precluded for higher priority listings (USFWS 2001). New Mexico is the only state where the subspecies occurs regularly where it is listed as Apparently Secure (BISON).

We detected yellow-billed cuckoos on three surveys (Table 1). One cuckoo was detected "cooing" from habitat below the Alma Bridge on the June 6th Harve Gulch survey. Another cuckoo was detected on the second survey of the Harve Gulch Section. On June 25th, the cuckoo called loudly ("kowlp" call) from a mature cottonwood, halfway through the narrow canyon of the lower section. On July 15th, the surveyor visually observed a cuckoo on the Heart Bar Survey.

COMMON BLACK-HAWK (*BUTEOGALLUS ANTHRACINUS ANTHRACINUS*) – In New Mexico, the black-hawk is most common in the Gila River watershed but across its range, state and national listings reflect a decline in the species attributed to a loss of cottonwood bosque breeding habitat and illegal shooting (BISON). The black-hawk is listed in all three states in the United States in which it occurs regularly: Threatened in New Mexico and Texas, and as a Species of Special Concern in Arizona. The black-hawk breeds primarily in Mexico where it is listed as Threatened (BISON).

We recorded the presence of black-hawks on multiple surveys of four sites (Table 1): San Francisco – Keller Canyon Section, - Harve Gulch Section, Main Fork Gila River, and

the Heart Bar where we also documented an active black-hawk nest.

PEREGRINE FALCON (*FALCO PEREGRINUS ANATUM*) - In the Gila River watershed, the peregrine falcon is an uncommon permanent resident that is known to breed in the Gila National Forest (BISON). The New Mexico Natural Heritage Program lists the peregrine as Imperiled in New Mexico, and the state of New Mexico lists the peregrine as Threatened (BISON).

The surveyor observed a peregrine falcon flying over the Heart Bar Ranch on July 3rd.

HABITAT ASSESSMENT

We assessed a good deal of variation in the level of habitat suitability on the surveys completed in 2004.

We rated the habitat within the Harve Gulch Section of the San Francisco River as unsuitable to marginal for attracting breeding willow flycatchers. Only the first few hundred meters below the Alma Bridge had any potential for attracting flycatchers. The riverbed in the lower section within the narrow canyon is almost completely dry throughout the breeding season and the prevalence of cobbled substrate indicates frequent flooding of most of the floodplain. For these reasons, suitable riparian habitat is unable to develop. The habitat of the upper section includes stringers of coyote willow we assessed as only having marginal enticement to breeding flycatchers because of the short stature.

The habitat within the Alma Section of the San Francisco River was unsuitable for flycatcher occupation in 2004, but the floodplain structure is such that river terraces located within the 25-100 year flood interval are present. These terraces have the potential to support mature cottonwood communities. With continued exclusion of livestock, plant communities on younger landforms within the active river channel will become increasingly vegetated, therefore we believe the site has the potential to support

extensive, structurally complex riparian habitat that could attract breeding flycatchers in the future.

The habitat within the Keller Canyon Section of the San Francisco River has potential to attract breeding willow flycatchers. From an assessment of the hydrology and topography of the area beyond the site, it is more likely that there are flycatchers breeding downstream and upstream from the site but both areas are within private holdings. The riparian in the immediate area of the river impoundment is healthy and dense and is comprised of vegetation species that is used for nesting substrate by the large population in the Cliff-Gila Valley. The extent of riparian growth is limited by the narrow floodplain but if flycatchers are occupying the floodplain downstream or upstream from the site, there is potential for the habitat to be occupied if the population were to expand into the periphery.

The habitat at the Glenwood Fish Hatchery has good potential to attract breeding willow flycatchers. Mature boxelders are well represented in the dense canopy of the riparian forest on the site. Similar habitat is occupied by flycatchers in the nearby Cliff-Gila Valley where the breeding sites are in habitat with denser foliage in the subcanopy, higher foliage densities, and greater number of boxelders within the territory (Stoleson and Finch 2003). We also assessed the habitat along Whitewater Creek as suitable because of the presence of water, bluestem willow stands, and a mix of vegetation species of varying-ages growing streamside. Soils on the site are well developed and slow-moving, open water is present.

The habitat on the Heart Bar Ranch has good potential to attract breeding willow flycatchers. As at the Glenwood Fish Hatchery, boxelders form a dense subcanopy within an extensive patch of mature cottonwood forest (Figure 15). Additionally, the broad floodplain allows for the formation of overflow channels with fine substrates that support willows (Figure 15) with similar stature and structure to occupied overflow channels in the Cliff-Gila Valley.

The habitat at the Main Fork site has only marginal potential to attract willow flycatchers. Dense alder patches adjacent to inactive overflow channels filled with lentic water and have the foliage characteristics and mesic conditions needed to attract breeding flycatchers. However, suitable habitat is limited and sparsely distributed, and the hydrology of the floodplain does not allow significant soil development in order to support dense, multi-structured patches of riparian habitat.

CLIMATIC INFLUENCES ON FLYCATCHER NUMBERS

New Mexico has been experiencing drought conditions since 1996 and with severely dry conditions in the winters from 2001 – 2003, the conditions intensified (Richardson 2004). The mountains of southwest New Mexico received enough precipitation in the last six months to be classified as "moderately wet" (Western Regional Climate Center), yet the soils are still suffering from multi-year deficits (NM Drought Task Force 2004). Currently, 7-day stream flows on the San Francisco are below the historical average (USGS Stream Flow Data) despite near-to-normal, to slightly above normal precipitation levels in the past 30-days for the area (High Plains Regional Climate Center). Even with continued near-to-normal or even slightly higher-than-normal precipitation and snow pack, it will take time for ground water levels and stressed habitats to recover.

Abundant water has been shown to be a critical factor affecting willow flycatcher settlement and nesting success (Sogge *et al.* 1997, Johnson *et al.* 1999). Flycatcher population trends in the Cliff-Gila Valley have coincided with precipitation levels (Brodhead et al. 2002). With the onset of drought in 2000, the population declined dramatically (Stoleson and Finch 2000) and in 2004, a small increase in breeding birds from the previous year was recorded, corresponding with the above average spring precipitation. In general, when a population declines, its range will contract spatially, a phenomenon that was observed in the Cliff-Gila Valley in 2000 when the population dropped dramatically (Stoleson and Finch 2000). The combination of drought and subsequent range contraction of the reduced population may be playing a role in the lack of flycatchers breeding in the sites surveyed in the San Francisco and Gila watersheds. If

the population were to rebound with continued recovery from drought, it is likely the flycatcher population would expand its range and could occupy suitable habitat in the sites that were surveyed in 2004.

RECOMMENDATIONS

Although no detections of flycatchers were recorded in these surveys, there is a likelihood that birds will emigrate from the Cliff-Gila Valley with continued cessation of drought and a resurgence of the flycatcher population. The drainages surveyed here and those on the Mimbres are the most likely targets for emigrants. Evidence suggests successful emigration may be more likely in years with abundant springtime precipitation. Therefore, we recommend that surveys continue during the 10-year span of the Biological Opinion.

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Table 2. Results of surveys for southwestern willow flycatchers.

Survey Site	Date	Surveyors[1]	TimeStart	TimeEnd	SWWF	Other Species of Interest[2] YBCU	COBH	PEFA	BRCO
Glenwood Fish Hatchery									
	5/26/2004	DAF,CLW	11:30	12:00	0				
	6/9/2004	KMB,DAF,AGT	5:49	6:17	0				
	6/25/2004	KMB,CLW	5:44	6:02	0				
	7/1/2004	CLW	6:00	6:15	0				
	7/7/2004	CLW,DAF,AGT	6:15	6:30	0		✓		
Heart Bar Ranch									
	5/27/2004	CLW	6:47	9:00	0		✓		
	6/18/2004	CLW	6:10	9:10	0		✓		✓
	7/3/2004	CLW	6:15	9:15	0		✓	✓	
	7/9/2004	CLW	6:10	9:10	0				
	7/15/2004	CLW	6:20	9:37	0	✓	✓		
Main Fork Gila River									
	5/27/2004	CLW	10:24	11:17	0				
	6/19/2004	CLW	10:10	12:25	0		✓		
	7/3/2004	CLW	11:25	13:25	0		✓		
	7/9/2004	CLW	10:00	12:00	0				
	7/16/2004	CLW	6:20	8:30	0				
San Francisco - Alma Section									
	5/26/2004	CLW,DAF	10:45	11:15	0				
San Francisco - Harve Gulch Section									
	5/26/2004	DAF	7:10	9:04	0		✓		
	6/9/2004	DAF,AGT	7:00	9:05	0	✓			
	6/25/2004	KMB	6:34	8:10	0	✓			
	7/1/2004	AGT	6:45	8:15	0				
	7/7/2004	DAF,AGT	6:50	8:20	0				
San Francisco - Keller Canyon Section									
	5/26/2004	CLW	7:25	9:45	0		✓		
	6/9/2004	KMB	7:02	7:59	0		✓		
	6/24/2004	CLW	6:40	7:50	0				
	7/1/2004	CLW	6:45	7:45	0		✓		
	7/7/2004	CLW	7:00	8:00	0				

[1] KMB=Katherine Brodhead, DAF=Denise Friedrick, AGT=Allena Thompson, CLW=Cynthia Wolf

[2] SWWF=Southwestern Willow Flycatcher, YBCU=Yellow-billed Cuckoo, COBH=Common Blackhawk, PEFA=Peregrine Falcon, BRCO=Bronzed Cowbird